RM User

Volume 8:5
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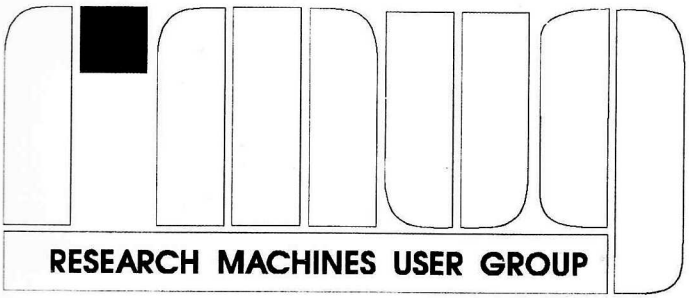

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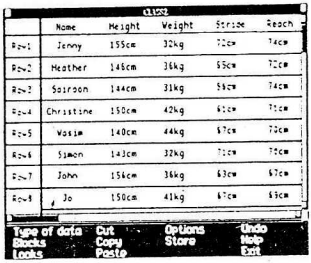

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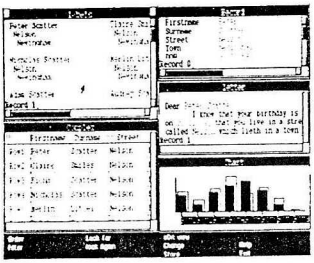

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Send for more information

HelpLine

The User Group exists to help its members use the computers which they have.

Many of you (about 20%) are home users of Nimbus computers and we would like to help you. Do please phone any of the people whose numbers are listed at the back of the magazine and we will do our best to help.

You may find that you have a problem which you feel is too trivial for Customer Support or you may have a problem with which they can't help, perhaps because you have a non-standard setup for your equipment or you are using third-party equipment. This is the time when we may be able to help.

Remember that you can telephone the User Group members in the evening or at weekends when RM is shut (and, of course, you are just bound to hit problems). Also, RM don't claim to have great knowledge of products which they don't produce such as Excel or PageMaker. They can tell you how to install the packages on their equipment and how to get started but they cannot be expected to give you in depth support on using the packages. We, on the other hand, can. Most of the people whose phone numbers are listed at the back are using a range of software which is probably the same as yours on a daily basis. We may have met exactly the problem you have just encountered.

If you are in difficulty, please feel free to ring anybody on the Committee (numbers at the back) and you may also phone Tim Phillips on 0284 706623 (home number).

It is a great help if you are having a problem doing something using your computer if you can be next to it when you phone because it may then be possible to talk you through a solution over the phone.

If your problem is not urgent, or you think it may be difficult to explain over the phone, then do please write to the Editor with your query. I will either reply to you directly or pass your query on to a better person to solve it or publish your letter in the next magazine as a request for help.

If you have had a problem which you have solved for yourself then please share your knowledge; your solution is quite likely to be useful to someone else, even if you think it is trivial; remember that many of our members are new to using RM equipment.

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The date shown above is the ***latest*** date for copy for the magazine. You will normally receive the magazine about 2-3 weeks after the date shown.

Missing a Magazine?

Back issues of the magazine are available from the editor. Write to RMUG, FREEPOST, London W12 0BR for more details.

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News and Editorial

I've just come back from this year's BETT. This was the tenth and I've been to 9 of them (is this a record?) and a trend that's been noticeable for some time is the way in which most of the exhibitors are moving away from selling technology towards selling ways to teach which just happen to use technology. One of my colleagues went twice because he was so impressed at the range of things to see which were not what he thinks of as hi-tech frippery!

This of course has been helped by the increasing power and decreasing price of computers - more schools can now afford to buy good computers which can run powerful software which can be used without you having to worry too much about what goes inside.

I do worry about what's inside (or rather, I like to know) and the Pentium is what's inside the latest computers. Not many schools will buy Pentium based systems this year but they will as the price falls and this means that even more complex work will be possible on a school system. To digress into technology for a moment, in January 1985 RM showed the PC186 at the Barbican. I don't have exact details of prices but I think that the first hard disc based machines cost about £2000. They had a 10Mb hard disc and, I think, 512kb of memory. The processor ran at just 10MHz and they drew rotating 3D Nimbuses and ducks. (Have a look at the DUCKDEM program that comes on your RM BASIC disc if you've not seen the ducks before.) In 1994, RM showed their new Pentium machine. I didn't ask the price (I know I can't afford it!) but most such machines are in the £2000-£3000 range, have at least 200Mb hard discs, 8Mb of RAM and run at 60MHz. It wasn't drawing ducks but it did have rotating 3D shapes (admittedly faster, smoother and with more colours) The point is that both machines are top-end machines for their time but it's possible to do so much more with the machines now than it was then. I know that most of our pupils can now sit down in front of a computer and start doing something useful very quickly whereas in 1985 there was much less that could be done - too much software was either not really suited to teaching anything apart from how difficult computers made things and too little real applications existed.

Also on show for were the new Technology and French Courseware packs. They looked interesting and should help with the cross curricular delivery of IT which Sir Ron Dearing seems to be encouraging. Again, the emphasis is on carrying out a project (for example, organising a party for Technology which includes research, generation of ideas, planning and making) in which the use of the computer is almost incidental but requires the development of a good range of computer based skills. In French the pupils are required to understand authentic French texts which they then must process in various ways. Included is a dictionary for when they get stuck with certain words. (Incidentally, Microsoft have full dictionaries for Word's spell checker in a variety of languages; these work in the same way as the normal

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spell checker - contact Microsoft on 0734 270000 for details). There are more details of these and RM's other learning resources in a new publication called RM Learning Resources; well worth a read if you're trying to plan cross-curricular work or just get more staff to see the value of IT in their lessons.

RM have launched a range of new products which demonstrate their increasing commitment to the primary sector. These include the latest version of Window Box (which talks!), Music Explorer and Jack the Giant Killer. Music Explorer is a composition package and is included with the Window Box Sound System, as is Musical Pairs, a sound matching game. Talking First Word for Windows is also included and this can speak both single words and whole sentences and it includes a phonetic dictionary. Network versions of Starting Grid and First Word for Windows have also been released and these are not only suitable for primary schools. They actually comprise the complete versions of Excel and Word together with clever software which makes them appear much simpler at first but it's possible to move up to the full product as pupils develop their skills. This allows pupils to learn with a non-threatening version of the program and then, when they are ready, more of it can be revealed to them.

Window Box is also moving out of the Primary Sector; RM have just released a Special Needs system in conjunction with SEMERC. One of the features of Window Box is the ease with which it can be configured and this is especially useful in an environment where, for example, some users may need larger type and others may need to use nonstandard input devices. It includes Claris Works for Windows, Picture Resources and a selection of example activities provided as templates for Claris Works and developed by SEMERC.

Multimedia was much in evidence at the show and RM had their latest versions of the Integrated Multimedia System to show. This now matches the MPC 2 specification (which needs a double speed CD ROM drive and 16 bit sound card). Incredibly it now costs less than the older machine so it's well worth a look.

One of the most important things from my point of view hardly got a mention on the RM stand (although it was central to everything there) - Net LM 2 is here! It's been a long wait but you can at last buy a network which runs Windows 3.1 from RM. Of course there's more than just a new version of Windows; the core Lan Manager product has changed and lots of other things have been altered to make it better. One thing that's not available with new servers is support for the PC186. I know that this may upset some people but I think that it's the right decision. Although many schools have still got working PC186s there really is a limit to how much they can do - none of the major applications in the library (Excel 4, Word 2, Access, Draw, PageMaker 4) will run on a 186. Talk to sales for more information about buying new or upgrading; new systems are shipping now, upgrades will follow "soon" but should be in time for a summer holiday upgrade The only slightly disturbing thing about the product list that I saw is that the largest server available seems to have only a 1Gb disc but I understand that 2Gb should be available "real soon

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now" and bigger ones later on. (Just 3 years ago I bought a VX386-16 with 110Mb hard drive, convinced that this was the biggest anyone could ever need. Last night I backed up about 1.5Gb of data on my network!)

RM were also showing a pre-release version of the Auditor software for Net LM 2. It's not yet finished so may change before you can buy it but it looks as if it can provide useful information about what's happening on your server including statistics on the usage of servers, printers, applications, stations and users. Computers can be grouped to reflect their physical layout within the school so that you can see which rooms are busiest and so on. Essentially, RM have provided the tools to make sense of the rather big text file that standard Lan Manager auditing produces (although the printer reports are provided by using a replacement for the standard OS/2 print manager which runs on the server). I could certainly see a use for it in school, provided that it is affordable. Meanwhile, I've been having my own go at interpreting the Audit Log - see my article later in the magazine.

There's a new Systems Price List available from RM - it contains a mix of good and bad news. The good news includes reductions in price for 8Mb systems (8Mb is probably a sensible minimum) but slight increases for 4Mb systems. It's been possible to buy RM machines pre-loaded with Microsoft Office for some time but I've only just seen it in a catalogue. The best news is that for just £90 more than the price of a standard S-Series machine you can get Word, Excel, Access, PowerPoint, Publisher all loaded onto a bigger hard disc - this is an incredible bargain. At Education prices the software alone would cost over £600 so this represents amazing value.

RM Direct! have a new catalogue out - some new products and some price reductions plus a free, high quality mouse mat if you order now. They are also offering two new discs with demonstration copies of a range of programs. The first contains Autosketch for Windows, Three Dee World Builder and a Computer Aided Manufacturing program called PEPS1. The second contains Lotus Organiser, Claris Works, Lotus Approach and Filemaker Pro. Each disc costs just £5 and allows you to sample the software before you buy the full product. RM Direct! are on 0235 826216 or FreeFax on 0800 833872.

Yet another new publication is the Schools Strategy for IT booklet. This is a book which attempts to guide you through the sorts of decisions which need to be made by anyone developing IT in schools and lists some of the points you need to consider. It's obviously biased towards suggesting that you buy Net LM (but I don't disagree with the conclusion!) and it argues for the product clearly and concisely. get your copy from School Sales on 0235 826868.

If you've got a computer but want to upgrade it to Multimedia PC standard then you should take a look at Cumana's offering. This gives you a double speed CD drive, SoundBlaster Pro card, microphone and mains powered speakers (ie MPC 2 standard equipment) plus 5 discs for just £379. The discs are all quality titles from Attica (Hutchinson Encyclopedia, Periodic Table, Classical Music, The Sunday & Daily Telegraph and World

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War II Archives) and should be useful in most schools; they represent amazing value because they would cost £475 if bought on their own. It's worth noting that this is £20 less than RM charge for a similar upgrade with no discs included!

Lots of companies were showing CD ROMs; the good news is that many of them looked worth buying and were at a more reasonable price. The Times is coming down in price to £175 per year for schools and this, at last, includes a free network licence. The Guardian stays the same price (£195) but will now include the text of the Observer. Still no news yet of the official launch of the Windows version for either of these but the launch of the Guardian on the Mac must make this a possibility soon. (Times from News Multimedia on 071 782 3982, Guardian from Chadwyck Healey on 0223 311479)

Chadwyck Healey have recently launched a schools edition of the 1991 census on CD ROM which is a subset of the information available in the full census. The data have been selected to be particularly relevant to the National Curriculum (who said which version?!) and includes mapping software to allow you make sense of the numbers. It all runs under Windows and it's easy to export data to other packages, such as Excel for further processing. It costs £195 for a single user or £295 for unlimited network use (but note that it needs Windows 3.1 on a 386 or better computer). Details of this a 1981 census disc for £275, the complete Hansard at £195 per year and all the other broadsheet newspapers from Chadwyck Healey (0223 311479).

One of the CD ROMs that could be a must if you teach Geography at A Level is SCAMP (the Schools Census and Mapping Package) which allows you to analyse incredible amounts of data from the 1991 census. It doesn't have the most user friendly interface but the data it contains makes it worth persevering. It is networkable (but needs Windows 3.1) and runs on a 286 upwards. Contact Claymore services on 0404 823097 for more details - they seem a very helpful company.

The actual CD ROM drives continue to get cheaper and better specified. I've seen the Mitsumi advertised for £99 (but I can't remember where!) and the Panasonic double speed drive starts at about £140 without interface (it will plug into a Soundblaster if you have one) Unica have a range of CDs on which they offer educational discounts and also sell hardware. Their best specification drive is the Texel 3028 which is comparable to, or slightly better than, the Toshiba 3401 (which is one of the best drives available) and this costs £299 to education with a SCSI card; £259 without (it comes with drivers for a wide range of SCSI cards, including Corel SCSI, Adaptec and Future Domain. Unica are on 061 429 0241.

SPA continue to produce good software that's fun to use. They have a new catalogue which I think gets mailed to most schools but if you've not got one then it really is worth getting it. Sparks is their data handling program (mentioned here before) which is both database and spreadsheet. It can take in pictures from PaintSPA or export to Write On! and costs just £59 for one user or £179 for a 16 user pack. You can now also

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buy a data pack on all the countries of Europe. Typically for SPA, they've thought about the fact that different groups of users need different levels of information so there is a simple to understand format and a full format for older (or more searching) pupils.

PaintSPA has undergone a facelift to become PaintSPA Plus. This is now able to take advantage of VGA screens and can work in up to 256 colours. It can read BMP pictures which is great if you sometimes work under Windows and can also load fonts such as those from NewSPAper. It costs £41 standalone or £119 for network and good value upgrades are available. SPA can be contacted on a new telephone number - 0684 833700. (The number has changed because, and I quote, "BT have removed Granny with her knitting needles and spaghetti from our telephone exchange and given us a brand new one (exchange, not Granny!) with brand new numbers")

Sherston is another company which produces a range of software which includes items suitable for younger pupils. Although much of their stuff is for Archimedes computers, they do have a good selection for PCs including a good selection of adventure type programs. Contact Sherston on 0666 840433.

A number of companies are now producing models and simulations which work with Excel. Amo Publishing. produce a package known as the Warwick Spreadsheet System which is an add-in for Excel designed to make it easier to use and this has now been supplemented by packs for Physics, Chemistry and Biology. These allow investigations into such things as Alpha particle scattering, eyes, cameras and magnifying glasses in Physics, human growth and diet analysis in Biology, rates of reaction experiments and acid-alkali reactions in Chemistry (there are 10 or more items for each subject). Prices range from £49 for a single user to £150 for 50 users (licences for larger numbers are available). Amo Publishing are on 081 401 1111

Essex County Science Centre have produced two sets of 6 spreadsheet examples and laminated worksheets or posters which give some excellent ideas for using Excel in science. They include looking at breaking distances for cars at different speeds and on different road surfaces, the effects of different types of breakfast cereal and their nutrient content, looking at pendulums, bouncing squash balls and many others. I particularly liked the exercise on house insulation. This is a sheet which has a diagram of a house and a number of buttons to select things like double glazing, thick or thin curtains, carpets and so on together with boxes where you type in inside and outside temperatures and other relevant data. The sheet then calculates the cost per day of the heat lost through the building. It's very easy to use so the pupils don't have to worry about not being able to use a spreadsheet. I could also see it being used as a teaching example of how to "program" a spreadsheet for good GCSE or A Level candidates. Each pack of 6 costs just £7.50 and are obtainable from Essex County Science Centre at Duffield Road, Great Baddow CM2 9SW.

There are several new launches due from Attica including the ITN European Video Atlas which contains

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maps and a wealth of moving video and text information on all the countries in Europe. Investigating 20th Century Art is based on 150 works of art from the Tate Gallery and includes a number of interactive tasks. The Attica Writers Reference Bookshelf includes an encyclopedia, dictionary, thesaurus, book of quotations and almanac. It is designed to be used alongside any Windows word processor and searching is not confined to one book at a time.

NCET have just released "a chemistry set on a single disc" which is an interactive library of chemical experiments, molecular structures and information intended for use by all pupils from Key Stage 3 to A Level. It allows users to view a large number of experiments which are either too hazardous or too expensive to perform in a school lab and to test the effects of varying conditions on those experiments. The other new product from NCET is a series of Maths CD ROMs looking at the World of Number. They include over 500 hours of classroom activity on a huge range of mathematical topics and are particularly aimed at those who find maths difficult or uninteresting but I expect that those who are keen on maths could also benefit enormously from them. The Chemistry Set costs £99 and each of the 6 Maths discs costs £79. The discs are distributed by New Media on 071 916 9999.

Many years ago when I was at University, the statistical package everyone used was called SPSS. I never used it but friends who did make use of it felt it was pretty useful but not too friendly (but that was the case with most mainframe software - all you got out was a stack of printout several inches high!) SPSS is now on version 6 for Windows. It can take data from a wide range of sources or you can even type it straight into the package and you can then analyse it in more ways than I can even understand! It's normally rather expensive (£13 000 for a site licence!) but at BETT it was on offer to schools for £999 for the same licence. I don't know when this offer ends but if you need to do some statistics then it's probably worth asking if the offer is still available! SPSS are on 0932 566262 and a demonstration disc is available.

Microsoft were at BETT on their own stand for the first time and they have apparently decided that all the software they are aiming at the home market has to cost less than £100 and have accordingly reduced prices - Encarta should now be available for £99 and less if you shop around - which makes it easily the best buy in decent Encyclopedias. They were showing a number of interesting products. Microsoft Creative Writer is a very easy to use word processor which can produce absolutely amazing results. For example, you can type a phrase and then choose to shape the outline of an envelope which constrains it and then colour each letter differently. You can do this sort of thing in Corel Draw, for example, but it's not easy. Here you just click on a menu and a set of pictures pops up. Choose the fish and your writing changes shape to fit inside it. You can add clipart (or bring in your own pictures) and if you have a sound card then you can have sound effects. It looked absolutely brilliant and it costs £49. It's certainly a far cry from the Microsoft Word which was available

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just 10 years ago on the first Nimbus computer!

The matching Microsoft product is Fine Artist. This is again easy to use but immensely powerful. It has over 70 different paintbrush styles, a large number of custom colours and patterns, a multilayer canvas, special effects for text and the ability to produce a slide show of your work which can also have sound added. It also costs £49. The academic version of both packages come with classroom creativity cards to give suggestions to teachers for activities which use the packages constructively. Both packages are available from Edhitec on 0423 871027.

Edhitec are also a good source for a whole range of interesting and useful software. Body Works version 3 has just been released and it is an absolutely fascinating program which gives a huge amount of information about the body and how it works, down to such things as how to pronounce certain words (they are actually spoken to you, even if you don't have a sound card!) It costs £49.95 or £149.95 for a 5 user lab pack. Note that the pack contains versions for both Windows 3.1 or DOS; it will only run on Net LM in the DOS version if you are not running CD support on the network but is excellent standalone.

Careersoft have been producing careers software for many years and a new venture is CID, the Careers Information Database which runs under Windows. Currently this holds details of about 400 different careers each with about 3 pictures and appropriate sounds of people working but this is growing. It's also possible to add your own data so that you can add details of local jobs to the system (which can also include pictures and sound). It's available both for hard disc installation at £75 and on CD for £120 (both are yearly subscription prices).

Also for Windows is the CV processor which includes a template editor so that tutors can set up a basic CV template for different groups of users. It includes a spelling checker and supports all Windows supported printers. It costs £49 for one machine or £95 for a site or network licence. Student Work Experience Processor is a program to help students write up a record of their work experience. It can be set up to prompt students for things like "the first day", "a memorable incident" and so on. It costs £49/£95 for single or site licence. Careersoft are on 0422 330450.

I used to love making electronic circuits and my first computer was a Nascom 2 which I lovingly soldered together. Now the circle is complete and you can use computers to build the electronic circuits! Electronic Workbench is a program which allows you to build and test a circuit on screen and only when you are certain that it will work do you have to get the components and make it. For a school this is ideal not only because you reduce the risk of students making circuits which are simply going to fry the ICs or transistors but because it can save an enormous amount of time; if the circuit doesn't work when you build it then you know you've made a mistake in the building rather than the design. The program costs £199 from Robinson Marshall on 0203 233216..

Many people are now taking a very hard look at the environmentally

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unfriendly nature of computers and their peripherals and one company which has done something about it is First Systems Technology Ltd. They have a wide range of recycled laser cartridges, toner refills and inkjet refills at incredible prices (for example we use the Epson EPL7500 printer in school and a standard cartridge for this costs about £130; FST do it for £69). If you are interested in saving money and doing a bit towards helping the environment then First Systems Technology can be contacted on 0932 860581.

Finally, some books. I sometimes worry that we are forgetting the value of the printed word so it was good to see a large number of book publishers at BETT. Pitman Publishing have been producing books to support the use of computers for a long time and one I liked a series of books called From Start to Finish. Each one is dedicated to a single application (Word 2, PageMaker 5, Lotus 1-2-3, for example) and provides a whole series of exercises to take pupils from just starting to full mastery of the package. Each book costs £12.99 and there is an optional disc set also for £12.99 to save you having to type in the exercises which have to be loaded by students. More information from Southport Book Distributors on 0704 26881.

David Fulton Publishers produce a range of books to help you learn a wide range of software packages - I've been looking at Illustrated Superbase 4. The first part of the book takes you through most of the simple facilities of Superbase such as creating a file, choosing appropriate indices, entering and amending data, using keys and filters to find records and producing simple reports, including merged letters. The second part of the book then introduces the concept of a relational database and using Form Designer. The whole thing fits together very well because it is based on one project - computerising the system used by a travel company. There are plenty of pictures, so you can check that what's happening on your screen is what should be happening, and some good explanations of what's actually going on (for example, the diagrams which explain how an index actually works are the clearest I've seen). Finally the book gives some suggestions without working but with sufficient explanation to enable most students to keep going. The ISBN is 1-85346-237-3 and it has a recommended price of £10.99 - it should be available through any good book suppliers.

In the last issue of the magazine I commented on the pricing of Net LM support contracts. I want to make it clear that I don't think that RM are making excessive profits (if any) from the service they provide - I've no doubt that it costs a huge amount of money to provide the level of support that even a basic contract gives. In comparison with Microsoft's charges ($150 per call in the USA for some products), RM seem quite cheap. My point was that many heads or governors are going to look very critically at a request for £2000 for something as intangible as support. You only have to look at what has happened to funding for LEA IT centres etc. to see what happens when schools are asked to pay directly for something which used to be "free".

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Shop Talk

David Palmer

As I write this I am having guilt feelings about having decided not to go to BETT. I think I have reached a point where my desires to be right up to date have been tempered by (a) exhaustion and (b) a feeling that I should make better use of what I have already. A step in this direction is the **Manufacturing By Design** program which is being run by NCET with funding from the CBI. They are putting on a series of workshops which cost £40 for a day including lunch, a set of workcards/project notes and a CAD package called DesignView. The program is interesting and allows you to set up a drawing with dimensions which can then be used in a formula. The result of the formula can be stated and the drawing will be redimensioned to give the desired result. Of course you can constrain some of the dimensions so that only one particular one is free to change if you wish. I hope this initiative suceeds and that it is followed by others - such as graphics workshops sponsored by Kodak and Corel for example.

I have still not got Applications Manager to do what I want, ie let my users run programs! I have spent a good few hours at it but it still won't do it. While on the subject of management tools I would like to have one which let me check the correlation between users and their directories. I have twice found that users have mysteriously been given new directories. These lack the .001 tail. I don't know if others have had this happen but it is a nuisance. I would also like something to keep an eye on the use of discspace, drive by drive. I have gone from 960M free to 802M free in 2 months and I would like a simple way to keep track of how much has gone to new software and how much to user data files. Restarting the server has just given me back 20M - and no, there weren't any WOOA.TMP files hidden either. I can use RMTREE to look at each drive but would prefer a Windows app that kept a memory diary. I am somewhat baffled by the fact that the 20M was used in the last 3 weeks but RMTREE /A 24-12-93 /H /R only gives me 7M of files. Suggestions on a postcard please!

It is ironical that there are still traffic problems on my network on the Z-net card. It is supporting 15 machines. If there is heavy traffic they jam and start beeping. I have to go around and turn them off until the beeping stops and the ones that are still on pick up their connections again. This is an example of retrograde performance in that I used to have 25 machines on one card on Net3.1 and if they were all turned on at once they would simply wait until the server had time to serve them. I do not harp on about Good Old Days but I would like to hope that RM is prepared to keep working on NetLM until it delivers that sort of performance. I suspect that I might be told that all their research is going towards newer products - like windows 3.1. I would hope that some effort might be made to improve the performance of Z-net under NetLM as well. The last management tool on my wishlist is a way of making global changes to my users. I may be naive but why can't I export a CSV file, make whatever changes I want and then re-import the CSV file.

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Heroes of the end of last term were the presenters of Resource at Doncaster. This is how computer shows should be. There was room to move around and time to talk to people. I suspect that what made me comfortable (lack of crowds) was actually bad news for the future of the show. I hope I am wrong!

Villains of this month are Microsoft. I bought the upgrade, Windows for Workgroups 3.11 to replace Windows 3.1 which I use on one station by setting it to Doslogon and running it from N:. This works fine for 3.1 but WFWG 3.11 is supposed to replace it and be more network aware. The install process crashes when it is checking the network card. I find this very strange since MSD.EXE has no problem reading it all! I did manage to get through to the help line on the first day it was released but since then I have waited for over half an hour (before giving up) on more than one occasion. This implies that I am not the only dis-satisfied customer! Phil Fox suggested using Compuserve and sure enough the first file on the stack in their Knowledge Base was about the install program crashing at this point. Sadly, there was no solution offered.

Help Wanted

I have an M-Series PC286 without a hard drive and I have been given a 31Mb drive from an IBM PS/2 model 50. This is the same type of drive as that fitted to the later M Series machines but it needs a special cable to connect the drive into the MCA bus slot. Does anyone have such a cable or know where one can be obtained (RM are unable to sell the cables withoug a drive attached!)

Contact:

David Robinson, 5 Stonebridge Road, Lighthorn Heath, Warwickshire CV33 9TX

I'm not sure if this helps but the RM part number for the required cable is 25411 - RM Service may be able to supply this even though Sales cannot

This reply came to me via RM's Bulletin Board. If you've never used this then it really is worth a look; assuming you have a modem and Windows then you can get started by using Windows terminal. Set the speed of the serial port to the highest that your modem supports (or 19200 if you have a 14400 modem), data bits to 8, no parity and 1 stop bit. Now dial 0235 826283 and then follow the instructions when you get through. You'll find lots of information on there and people who are always willing to help (including Phill Fox who sent me the reply!)

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Technical Tips

Stephen Sharrad

Switched Mode

If you are using Windows on any machine above a PC186 and you encounter the error "Failed to initialise graphics adaptor" after doing a DOS shell then this is because you have changed graphics modes. For example, if you load Windows as normal (colour VGA) and then do a DOS shell. If you then change graphics modes (e.g. by using XVIDEO - XVIDEO VGAM) and then type EXIT, Windows will not always notice that you have changed modes and the above error will occur. If you like playing about with strange programs then typing XVIDEO VGAC is probably a good idea before returning to Windows. (XVIDEO VGAM for a monochrome system will probably be correct).

(I've just been having a clear out of some old documentation and found the original release notes that RM shipped with Windows 3. This suggests putting XVIDEO VGAC in AUTOEXEC.BAT even for a mono system to speed up graphics and you must use it on a Net LM station before Windows loads if you have a mono monitor - Editor)

RAM your ROM

Some systems configuration utilities - like XSETUP, allow you to copy the graphics BIOS (Basic Input/Output system) into RAM from ROM. Normally, the graphic codes are kept in the system ROM. Unfortunately, ROM is very slow and this can be noticeable if you are using graphic controller intensive programs like Windows. If you have plenty of spare RAM then enabling the copying of graphics BIOS from ROM into RAM (remember RAM is the volatile memory of your system - its contents are lost when the machine is turned off) at startup may improve your performance.

Pick a Piconet

Users of the PC186 may well be aware of the Serial Piconet Module for the PC186. These modules are available as either internal or external modules. External modules simply connect to the AUX port on the PC186. Internal modules are connected by means of a small SIL connector on the mainboard. If you have more than one internal module then the two internal modules are simply linked by means of 6-pin bell connector connected pin-to-pin on each board. CONFIG is used to tell the machine that the AUX port is now being used for piconet. Each board is then configured using PICONFIG. Note that if you wish to stop using the piconet modules and just use the ordinary AUX port, you cannot just tell CONFIG that the mode is no longer PI. You must also physically remove the internal modules from the system by removing the mainboard-module connector. If you do not do this then your port will become unusuable.

What happens if you have more then one piconet module? Factory set configurations for each modules is address 0. If you therefore attach two modules then PICONFIG will display a bad piconet map and none of the ports will be usuable. You need to install each board at a time. Set the first board to have address 1 and then connect the second module in. You

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must power down the machine between each of these changes. The second module will be address 0 and this will be the module which the battery should be fitted to, as module 0 is used for a real time clock.

You also need to be careful that you do not overload your power supply unit. I could not find out how much power each piconet module draws, but I could find details for some other units:

Low Cost Parallel Port	0.22 A
Data Comms Card	0.45 A
GPIB Card	0.64 A
IBM Mode Utility Board	0.63 A

There is a spare 2.00 amps on the I/Obus. Connection of further devices would require an in-line power supply. It is quite possible that if you have two internal piconet modules, a utility board, and a LC Parallel port then you may be pushing your power supply to its limit and errors may develop on your ports. If your power supply is seriously overloaded then it should cut out - RM state that their power supplies incorporate shortcircuit, overheat and overload protection - but I would not put it to the test. It is also worth bearing in mind that some PC186 power supplies will be 10 years old and so may not be upto their maximum anyway.

If you have no optional internal devices then you can fit upto three internal or external modules (as long as there is no more than 9m of total external cable). Note also that parallel modules are only available as external modules only.

Also note that if you wish to use a serial piconet module for printers then the header inside or on the board should be set for use for modems. (Makes perfect sense, eh?)

If you are thinking about obtaining another port for your PC186 then the above may give you some information as to what you may or may not encounter if you decide to get a piconet module. Data Comms Cards are no longer available from RM and so the serial boards are the only option (they are not mentioned in the RM accessories section but I believe they are still available if you give RM a ring). Low cost parallel ports ("BBC I/O interfaces" in the catalogue) are still available but I do not know about Parallel piconet modules.

As usual, if anybody has any RM computer problems please give me a ring - my address and phone number are in the back.

Piconet was a really good idea for the PC186 which allowed you to have up to 32 devices daisychained giving lots of printers for example on the back of one computer. I know that one of the Universities had a network for which they had written their own version of remote printing well before RM's was available which involved a dedicated computer with lots of Piconet modules connected via serial cable to printers all over the building.

Piconet was never really exploited by many people. I think this was because the modules were too expensive. I seem to remember that it cost about £100 for the parallel version and £70 for the serial.

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Help Wanted and Given!

I am looking for a program which will allow me to run a program which can contact a bulletin board at preset hours during the night to exchange files. This needs to run on a PC186 and handle a protocol such as X-Modem. Contact cannot be used (it cannot upload or download files). Kermit has a suitable protocol but cannot be set to run at a certain time. Many of the standard programs which would do the job will not work on a PC186, even with the IBM emulator program running because they need access to a standard COM port. Does anyone have any suggestions for software which could be used?

Leo Zonneveld, Hanegevecht 7, 2811 Ac Reennijk, The Netherlands.

I've never tried doing anything like this on any computer. My only idea would be to try using Windows - I don't know if you could run some sort of program to start Recorder at the right time. This could then activate Terminal, get it to dial a number and execute the necessary instructions. If you have any better ideas then either let me know or write directly to Leo. Incidentally, you probably know that RM have recently been installing networks in Germany but you may not know that many PC186 computers were sold in the Netherlands.

I have been having a problem with using Oriel on a PC186 on Net 3.1. When printing over a network it split any printout longer than one page into separate spool files - helpful when you have a class all printing at the same time! I've now found that the splitting only happens on the printer attached to the station's LPT1 and it may have something to do with the way that Windows on the 186 regards PRN as a local printer. Anyway, I re-arranged my network printers so that LPT2 was the first network printer and have had no more problems.

If any Oriel users have found solutions to other bad behaviour then I'd be interested to hear.

John Low, St Mary's Hall, Eastern Road, Brighton, East Sussex BN2 5JF

I occasionally need to be able to run Dataease on a standalone PC186 as well as on my network but I don't know which files need to be copied onto the machine. Can anyone help?

Mrs Val Blaber, Brighton and Hove High School Tel: 0273 734112

Stephen Sharrad mentioned Paint Shop version 1 was on the RM Bulletin Board but didn't mention the filename. It's called PSP102.ZIP and it's in the Windows Library. It will work happily on a PC186 (although, obviously, with limited colours).

I am a research student at Keele University working with the English Department. My area of interest is the teaching of English and my research project is an investigation of the use of IT in teaching English.

I am particularly keen to find out what types of software and training are available for secondary school English teachers. I would welcome any information which might relate to my topic.

Gillian Flint, Hamerton, River Lea Mews, Madeley, Nr Crewe CW3 9EH.

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BETTer than school?

Angela Charlton

The opportunity for a group of pupils to take part in a newspaper simulation at the **BETT** exhibition at Olympia seemed too good to miss, so although we had never done a newspaper before, we accepted the challenge earlier this month.

Planning it

Five pupils accompanied me, first on two training sessions at the Institute of Education, and then to the exhibition itself - on January 11th (for preparation) and on January 12th, the first of the four days that the exhibition was open. The simulation was organised by Christina Preston, a director of Project Miranda, and we were also assisted by a team of journalists, including two members of Newspapers in Education. Three other schools were also involved and during the training sessions the pupils were given help with interview technique and feature writing and we also decided who would be responsible for which page. The subject for the paper was "**New technologies, young people and literacy**" and the target audience was young people (not computer experts) who are interested in getting an overview of the effects of new technology. This was chosen by Christina Preston so that the articles could be focused - she had met problems previously when the subject had been too wide and therefore the range of articles was too great to produce a unified whole.

Doing it

In the last four weeks of the Autumn term, the pupils researched suggested topics, arranged interviews with manufacturers who would be demonstrating new products at the show, and word processed articles and reviews, saving the text on disc to be downloaded on the day. We used Word for Windows 2 for this, but were also lucky enough to get a chance to try Word 6, so that the pupils could see what was new and what was better than before when using this package. The actual design of the pages was done for us on the day by the journalists - not because we couldn't do it but because the deadline for printing was crucial if the paper was to be distributed at BETT. We used PageMaker 5 for this and I could see that it was easy to download the text, but much more time-consuming to arrange it on the page to look professional. We were told that many schools still use 'cut and paste' for this but I felt that the ease of manipulation of the text into different shapes and sizes, using different fonts, made the final result look really good and therefore the effort was worthwhile. The name chosen for the paper was "**BETTer for IT**" and it consisted of four pages, A3 size.

The result

On the second day at BETT, there were three seminars on 'newspaper making in schools' and we had the chance to try to make a smaller news sheet for our school, using material which had not been used in the 'real' newspaper owing to lack of space. This is where I had my first opportunity to try page design, and I found it easier than it looked. After an afternoon's work, we were quite pleased with our efforts, which included three pictures, taken the

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previous day with a Polaroid camera, which we scanned directly onto the page, and several articles written by our pupils.

The whole experience was a wonderful chance for the pupils to see new technology in action. They used laptop and palmtop computers to record interviews and their impressions as they went round the show; they used a scanner to capture pictures taken just beforehand and they had the satisfaction of seeing their work printed in a professional-looking publication. Needless to say, they thoroughly enjoyed the whole thing.

If you would like to see a copy of the BETT newspaper and our first school attempt, I would be happy to send you one, on receipt on a large S.A.E. As an absolute newcomer to this kind of experience, I can recommend it, provided you have lots of patience and some enthusiastic pupils to help you.

Angela Charlton is Head of IT at South Hampstead High School, 3 Maresfield Gardens, LONDON NW3 5SS

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Micro Mart

Wanted:

Up to 6 Nimbus 286 or 386 stations with Ethernet cards. Please phone to discuss terms.

Contact Alan Nickless or Steve Flanaghan at Birkdale School, 4 Oakholme Road, Sheffield S10 3DH Tel: 0742 668408

Wanted:

- PC186 Advanced Programmers Reference guide - it's no longer available from RM.
- CorelDraw 2.0 - must be on discs not just CD only.
- Microsoft Flight Simulator Version 3
- Any other software which might run on a PC186.

Contact Stephen Sharrad, 10 Gainsborough Hill, Henley-On-Thames, Oxfordshire, RG9 1ST, Tel (0491) 577149.

For Sale:

PC186 with single floppy and Z Net Interface with almost brand new colour monitor. £250 or offers.

10 x 1Mb memory cards for M-Series PC286 (useful only if you have a 1Mb machine and want to run Windows at a reasonable speed). Offers in the region of £15 each.

Contact Steve Rochford on 081 740 5642 (home) or 081 741 1851 (school)

Wanted:

System Base 486/33MHz with 16MB RAM, 340Mb drive and tape streamer.

Needs to have OS/2 and EZTape software. Lan Manager and the software library are not needed but please call to discuss if necessary.

Contact Lyndon Evans on 0685 723663 (school) or 0443 690174 (home)

For Sale:

6 PC186 computers, discless with 1Mb RAM, colour monitors and Z Net interface. All have been used on a Net 3.1 network until recently.

Offers to Chris Boardman, King Edward's School, Edgbaston Park Road, Birmingham B15 2UA Tel: 021 472 1672

For Sale:

Due to major re-organisation and upgrade we have the following items to dispose of:

- 40 x 1Mb memory cards used in PC286 machines
- 5 x 4 way serial printer switches
- RML 380Z computer and monitor - still working.

Offers please to Janice Lee at Dame Alice Owen's School, Potters Bar, Hertfordshire EN6 2DU Tel: 0707 643441

For Sale:

- 1 x 2Mb RAM board for X Series (16MHz) £50
- 1 x M-series ethernet card (PN 22340 issue 3) First class condition, never used. £80
- 21 x Net 3.1 MCA ethernet boot ROMs (PN26137) Most are version 1.07A £100 for the set or £7 each

Contact Neil Craig, Ellon Academy, ELLON, Aberdeenshire, AB41 9AX Tel: 0358 720715

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How: Improving your performance

Stephen Sharrad

Technology is continuing to advance. What was a top-of-the-range computer in 1985 is now regarded as obsolete by industrial standards. Performance may be defined as the speed and capability (and also perhaps how easy it is to use) of any computer. If you have an S Series computer you may well be pleased with its performance and there is probably little you can do to improve it.

I must first make one point clear: Someone might say that any computer's performance can be improved simply by adding more to it or by making it do more things. I am not talking about someone who wants to use their computer to do something extraordinary, I am talking mainly of improving the speed or performance of ordinary everyday tasks.

So what can be done to improve the performance of your S Series? Firstly, there is the obvious subject of memory. 4MB is what RM recommend you should have as an absolute minimum, and I would agree. This is because many new software packages simply require large amounts of memory. If you have less than 4MB of RAM and you find that Windows applications are slow, or keep on crashing, or if you simply cannot run the application you want due to lack of memory, then I would seriously think about upgrading.

Another part of memory apart from ordinary RAM can be improved. This is called cache memory. This memory helps to prevent "bottlenecks" between the processor (CPU) and memory (RAM), by acting as a buffer. Some S Series systems will only be fitted with 128K of internal cache, upgrading it to 256K may well be worth considering if you really need to squeeze the last ounce, er...gram of performance out of your applications and you have more than 4Mb of memory, but for general use I wouldn't bother.

If you have either an S Series 386 or 486SX then you may also consider upgrading the graphics cards to 1MB, however their capabilities are advanced enough for most purposes. Few programs around require resolutions of 1024*768 at 256 colours, therefore the 512K AVGA card will be sufficient for most purposes. If you have a 386SX then you may also consider buying a maths co-processor (an 80387). This will improve the speed of 32 bit floating point calculations by a factor of about 20. A co-processor for some programs like AutoCAD is mandatory. A 486 co-processor would be very expensive (I'm not sure that RM even do one) as it requires the replacing of the main processor (the co-processor is built into the main CPU but is disabled by Intel in an SX system).

If you have an M or X Series computer then upgrading your system is probable something very much worth thinking about. AX and VX systems will only have EGA, whereas AX/2 and VX/2 systems will have basic VGA. Some systems can be upgraded to RMSVGA whereas others only to VGA - consult RM about this. VX systems can also have a 80387 co-processor fitted. The correct speed processor needs to be fitted to your

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machine (either 16 or 25MHz). These are about £49 from RM. M Series systems can be fitted with a colour enhancement board - this will improve the graphics to RM Super VGA (which is not the same as everybody else's SVGA!). The problem with SVGA is that there is not a set graphics standard for it. If somebody talks about VGA resolutions then it is known that they talk about 640*480 at 16 colours. SVGA can range from this up to 1024*768 in 16 and 256 colour versions and beyond.

M Series memory is expensive (and unique to the M series - you have to buy from RM) but if you only have 1MB of RAM then an upgrade is well worth it. Running Windows 3.1 on a 286 with 1 meg is awful. If you are going to buy more memory then I would recommend that you take the memory upto 3MB or 5MB (no more is needed!). PC386/20 systems will all have 2MB (the same as X Series) which may be okay for some users. However, check with RM before you order memory as not all upgrades fit all systems. (Note that you can't move from 1Mb to 3Mb and then later go to 5Mb without throwing away your 2Mb upgrade).

If you have a PC186 then there are a few things you can do to improve performance. Upgrading to 1.5MB of RAM is a good idea as you can use the extra 0.5MB of RAM as either a silicon disk or as a disk cache. Hard disk performance is radically improved by use of a cache (Windows 3.0 takes just 19 seconds to load with a relatively fast harddrive). PC186 graphics cannot really be improved apart from the Dartcom colour board (Dartcom, Postbridge, Yelverton, Devon, PL20 6SY, (0822) 88253). For this upgrade however you will need an analogue RGB/RGBI monitor, and the Dartcom board costs over £200. Software support/drivers may also be limited, but for further details contact Dartcom.

PC186 sound can be improved by the addition of a Roland CM32 sound module, however, I expect that these are no longer available from RM. Ironically, the in-built PC186 sound/voice, while not being standard, is far superior to any PC speakers found in any new PC's without an additional soundcard. Most PC186 84-key systems will also be fitted with a 10-bit ADCPM chip for real analogue voice output - unfortunately very little PC186 software makes use of this chip.

IBM compatibility can be improved on a PC186 by purchasing an IBM Mode Utility board for your machine. This provides slightly better compatibility (To prove it: Some older versions of Microsoft's Flight Simulator will run on a PC186). However, some IBM programs, while only needing CGA, will still not run on a PC186 because the PC186 cannot force all programs to believe that the machine has any graphic capabilities. Upgrading your firmware to 1.32f or above is also highly recommended - Windows 3.0 does not run very well either without newer firmware.

If you have a 480z or 380z then there is not much you can do to improve your system's performance. Taking your system to its memory maximum and/or obtaining a high resolution graphics (HRG) board may help but parts for these systems are now unobtainable (I do however have a few parts for a 380z and a Chain network server if anybody wants them). If you wish to transfer data

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from your 3/480z to a PC then save all of your data to ASCII format. Then, with a PC186 with a 5.25" drive connected, you can make use of the XFERCPM utility. Information from a BBC computer may also be transferred this way by use of XFERBBC.

Basically, in summary, if you have an older system, then upgrading whatever you can is a good idea if you have the resources as software is now beginning to leap forward on demands on hardware. If you are happy with your machine's performance as it is and if it does all you want it to then upgrading is probably not a good idea as you would never use the new advantages and it would simply be a waste of money. On the other hand, if you want your system to do more then carry out some of the ideas above. If you have a PC186 or 3/480z and wish to do more, it is probably better to replace your machine rather than bolt on bits to a machine which is now and always will be archaic.

I've got to agree with the last paragraph - if you have a really old machine then it may simply not be worth spending much money on it. One of the problems with the M-Series machine is the high level of integration on the main board and the MCA bus. For example, you can buy a Cirrus Windows Accelerator card for a normal IBM clone for less than RM charge for their colour enhancement card but it's no use to you because it won't fit in an MCA machine. I thought about buying new, non-MCA boards and fitting them because you can buy a 386 board for about £40-£50. This won't work because if you take out the main board from an M-Series machine you've got nothing left - video, serial, parallel and mouse ports, floppy controller, memory and network interface are all on the main board so you keep just the power supply and case! The X-Series is more promising; you can easily replace the on board graphics and if you did replace the main board you can keep your hard disc and controller for a new machine but you'll still need to buy all the other ports. I've also tried upgrading a 286 to a 486 with a special chip from Upgrade Solutions. This is a Cyrix 486 with a few other chips on a very small board that plugs into the 286 socket in an M-Series. I got this on trial and although it worked it wasn't really very fast - it comes with a program called Winspeed which gives an indication of the speed of the machine and it told me that I had an average 386. If it were cheap I'd recommend it but unfortunately it costs £250 so I can't really recommend it. Upgrade Solutions are on 0734 810020.

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Sorting

Howard Toon

Introduction

One of the most common basic operations carried out by computers involves the sorting of lists contained within main memory into some order. The lists can be as simple as a set of integers to be placed into numeric order or they might be something a little more complicated such as a complete set of personnel records to be placed into order of age. No matter how complicated the data actually is, the basic principal remains the same, i.e. use some key data-field for the sorting process and move the rest of the record along with the key field.

The algorithms following vary from the simplest (and usually the slowest) to some fairly sophisticated techniques which are widely regarded as being among the most efficient possible. The reader is strongly recommended to practice the techniques with a set of, say, 16 integers written on pieces of paper until confident that the basic ideas are understood. For each of the methods described in this essay, a Turbo PASCAL procedure is also provided and the methods are presented in order of, generally speaking, increasing efficiency with some timings later quoted for sample runs using Turbo PASCAL and an RM PC386. The PASCAL procedures are not considered to be the most efficient way of implementing the algorithm concerned but are written to be easily followed. For the sake of simplicity, and so that they can be used for comparison of speed if required, all the programs are designed to sort an internal array, containing integers, into numeric order. Each procedure is called with two parameters which are not really needed except in the case of Quick Sort, which has been written as a recursive procedure, but by being consistent the same driver program can be used with all of the modules.

The expansion of the programs to use strings or even more complicated structures is left as an exercise for the reader. (I used to hate seeing that in a text book but it's quite good fun doing it as an author!!).

The main reference used while writing this essay was Niklaus Wirth's 'Algorithms + Data Structures = Programs' but, in an essay of this sort, an acknowledgement is always due to the 'Bible' of such algorithms - 'The Art of Computer Programming' by D.E. Knuth. Knuth's and Wirth's analysis of each method give a clear explanation of the relative efficiency of the algorithms and they were fully supported by the actual timings made on the notebook.

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No.1: Straight Exchange or 'Bubble Sort'

In the Bubble Sort, the list of data is scanned two items at a time from the right-hand end. If the two values are in the right order they are left alone but otherwise they are swapped round. While this is being done, we get a situation like this:

10	8	5	3	16	4	9	11	14	12	6	7	1	15	2	13	Original list
10	8	5	3	16	4	9	11	14	12	6	7	1	15	**2**	**13**	2, 13 OK
10	8	5	3	16	4	9	11	14	12	6	7	1	**2**	**15**	13	Swap 2, 15
10	8	5	3	16	4	9	11	14	12	6	7	**1**	**2**	15	13	1, 2 OK
10	8	5	3	16	4	9	11	14	12	6	**1**	**7**	2	15	13	Swap 7,1
10	8	5	3	16	4	9	11	14	12	**1**	**6**	7	2	15	13	Swap 6, 1
10	8	5	3	16	4	9	11	14	**1**	**12**	6	7	2	15	13	Swap 12, 1
10	8	5	3	16	4	9	11	**1**	**14**	12	6	7	2	15	13	Swap 14, 1
10	8	5	3	16	4	9	**1**	**11**	14	12	6	7	2	15	13	Swap 11, 1
10	8	5	3	16	4	**1**	**9**	11	14	12	6	7	2	15	13	Swap 9, 1
10	8	5	3	16	**1**	**4**	9	11	14	12	6	7	2	15	13	Swap 4, 1
10	8	5	3	**1**	**16**	4	9	11	14	12	6	7	2	15	13	Swap 16, 1
10	8	5	**1**	**3**	16	4	9	11	14	12	6	7	2	15	13	Swap 3, 1
10	8	**1**	**5**	3	16	4	9	11	14	12	6	7	2	15	13	Swap 5, 1
10	**1**	**8**	5	3	16	4	9	11	14	12	6	7	2	15	13	Swap 8, 1
1	**10**	8	5	3	16	4	9	11	14	12	6	7	2	15	13	Swap 10, 1

That completes the first sweep through the list and two things are seen. First, the smallest value has been moved to the head of the list (it has 'bubbled' to the top) and most of the other values have moved in the right direction. Now, the whole process has to be repeated and this would have the effect of moving the 2 to its correct location in the list. We have to repeat the whole operation over and over until the whole list is correctly sorted and this will be after (n-1) complete sweeps have been done or after a sweep has been done without any swaps being needed.

This method involves an enormous number of comparisons and exchanges and is just about the most inefficient available. It is mainly this, combined with its simplicity and strange attraction for beginners, which has made it so notorious in the computer world. It is fairly easy to write a program for but it is utterly useless for any practical purposes other than the very shortest of lists. It can be shown that the time taken is relative to an n^2 function i.e. if we double the quantity of data, we can expect to take about four times as long. This is supported by the timings at the end of this essay which show also the inefficiency of this method.

No.2: Straight Selection

In this method the process is to find the smallest item in the list and then exchange it with the first item in the list. Now the next smallest item is found and exchanged with the second item in the list and so on until the end of the list is reached. At each stage there will be significantly fewer moves than in the Bubble Sort method.

Using the same set of numbers as in the previous example, the sequence of operations would be as shown in Fig 2.

As can be seen from the timings later, this also appears to be an n^2 type method although it is certainly much faster than the previous one.

No.3: Straight Insertion

The straight insertion sort is a method which is used very commonly by people when dealing with a small number of items such as a card index

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10	8	5	3	16	4	9	11	14	12	6	7	1	15	2	13	Original list
1	8	5	3	16	4	9	11	14	12	6	7	**10**	15	2	13	Swap 10, 1
1	**2**	5	3	16	4	9	11	14	12	6	7	10	15	**8**	13	Swap 8,2
1	2	**3**	**5**	16	4	9	11	14	12	6	7	10	15	8	13	etc
1	2	3	**4**	16	**5**	9	11	14	12	6	7	10	15	8	13	
1	2	3	4	**5**	**16**	9	11	14	12	6	7	10	15	8	13	
1	2	3	4	5	**6**	9	11	14	12	**16**	7	10	15	8	13	
1	2	3	4	5	6	**7**	11	14	12	16	**9**	10	15	8	13	
1	2	3	4	5	6	7	**8**	14	12	16	9	10	15	**11**	13	
1	2	3	4	5	6	7	8	**9**	12	16	**14**	10	15	11	13	
1	2	3	4	5	6	7	8	9	**10**	16	14	**12**	15	11	13	
1	2	3	4	5	6	7	8	9	10	**11**	14	12	15	**16**	13	
1	2	3	4	5	6	7	8	9	10	11	**12**	**14**	15	16	13	
1	2	3	4	5	6	7	8	9	10	11	12	**13**	15	16	**14**	
1	2	3	4	5	6	7	8	9	10	11	12	13	**14**	16	**15**	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	**14**	**16**	

Fig 1

or a 'hand' of playing cards. Each item is picked up in turn and placed directly into the correct position in the set which has already been examined. As an example consider the set of numbers shown below and imagine the numbers to be written on pieces of card placed face down on a table.

10 8 5 3 16 4 9 11 14 12 6 7 1 15 2 13 Original list

If we pick up the first item, the 10, it must be placed in the first place in our list since it is the only one we have seen so far. We now pick up the second card and, by inspection, see that it must be placed to the left of the 10 so the 10 has to be moved to the right to make way for it. Obviously, if we were to physically carry out this process we would have to constantly shift cards to the right each time we insert a new one into its correct place in the set but eventually all the cards would be located properly.

For the set of numbers above, the list would grow as shown in fig. 3.

This constant moving of numbers down the list has got to result in a fairly slow algorithm if we have a large set of numbers but it can be quite impressive when the list is fairly short. In any event, the timings show that it is more efficient than the previous methods although it still appears to be an n^2 type method.

10
8 10
5 8 10
3 5 8 10
3 5 8 10 16
3 4 5 8 10 16
3 4 5 8 9 10 16
3 4 5 8 9 10 11 16
3 4 5 8 9 10 11 14 16
3 4 5 8 9 10 11 12 14 16
3 4 5 6 8 9 10 11 12 14 16
3 4 5 6 7 8 9 10 11 12 14 16
1 3 4 5 6 7 8 9 10 11 12 14 16
1 3 4 5 6 7 8 9 10 11 12 14 15 16
1 2 3 4 5 6 7 8 9 10 11 12 14 15 16
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Fig 2

No.4: Insertion with Diminishing Increment or 'Shell' Sort

This sorting method was devised by D.L. Shell in 1959 and uses a series of sorts on sub-sets of the original list. The method is not easy to illustrate on very small sets of data but, using the same list as before, we could try sub-sets of every fourth item to start with.

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10 8 5 3 **16** 4 9 11 **14** 12 6 7 **1** 15 2 13 First sub-set
1 **8** 5 3 10 **4** 9 11 14 **12** 6 7 16 **15** 2 13 Second sub-set
1 4 **5** 3 10 8 **9** 11 14 12 **6** 7 16 15 **2** 13 Third sub-set
1 4 2 **3** 10 8 5 **11** 14 12 6 **7** 16 15 9 **13** Fourth sub-set
1 4 2 3 10 8 5 7 14 12 6 11 16 15 9 13

Now that these four sub-sets are sorted we could now use sub-sets of every second item and sort them to give the following table:

1 4 **2** 3 **10** 8 **5** 7 **14** 12 **6** 11 **16** 15 **9** 13
1 **4** 2 **3** 5 **8** 6 **7** 9 **12** 10 **11** 14 **15** 16 **13**
1 3 2 4 5 7 6 8 9 11 10 12 14 13 16 15

To complete the process, this final list is now treated as one set and a simple sort completes the task.

1 3 2 4 5 7 6 8 9 11 10 12 14 13 16 15
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

The size of sub-sets used here was taken from the doubling sequence of 1, 2 and 4 etc. but Knuth suggests that a better choice would be 1, 4, 13... etc. using the function $(3x + 1)$ to generate each term from the previous with 1, 3, 7, 15.. given by the function $(2x + 1)$ as an alternative. According to Wirth, this last series gives a timing related to a function like $n^{1.2}$ and it is certainly the most efficient and fastest of those considered so far. The timings made for this sort show a significant improvement - a factor of about 150 times faster than that of previous methods when considering moderately sized lists.

No.6: Partition Sort or 'Quick Sort'

In 1964, C.A. Hoare published details of a partition sort which had a performance that was far beyond anything previously seen and both the author and the computer world in general gave it the name Quick Sort. The basic idea is quite simple and consists of repeatedly dividing the items to be sorted into two sub-sets. One sub-set contains all the value less than or equal to some selected member of the set and the other sub-set contains those which are greater than the value.

10 8 5 3 **16** 4 9 11 14 12 6 7 1 15 **2** 13Original list

If we now use the first value, the 10, to divide the list we proceed as follows. Working from the left, find the first value greater than the 10, and mark it. Starting from the right find the first value less than the 10 and mark that too.

{8 5 3 2 4 9 1 7 6} {10} {12 14 11 15 16 13}

Now swap these two values and repeat the operation over and over until our two searches meet somewhere in the list. This meeting point is where the 10 is left. We have now created three sub-lists.

{5 3 2 4 6 1 7} {8} {9} {10} {11} {12} {14 15 16 13}

{3 2 4 1} {5} {6 7} {8} {9} {10} {11} {12} {13} {14} {15 16}

{2 1} {3} {4} {5} {6}{7} {8} {9} {10} {11} {12} {13} {14} {15} {16}

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

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The left and right sub-lists are each now treated in exactly the same way as the original list and the process of repeatedly sub-dividing the increasingly smaller sub-lists will eventually give n sub-lists each containing one element and the sort is the completed. For our example, the process would be as follows.

In the procedure used to illustrate the Quick Sort, this repetition method for sub-sets demonstrates an elegant programming feature called recursion. If the PASCAL code is examined it can be seen that at the end of the procedure, it calls itself to sort the sub-lists and so on. While this may be economical in coding terms, it hides the fact that the computer is repeatedly having to create temporary storage to hold values each time the procedure goes to a deeper level. This is not too critical for the data used in the tests later but it matters a great deal for larger programs, smaller stores and more complicated data structures. The method will also be far more efficient if the value used to partition the list happens to be the median of the data. If finding the median is considered to be too cumbersome, then perhaps the median of the first, middle and last items in the list would be more efficient than using the first item as I did in my example. The timings show that this method is about twice as fast as the Shell sort and something like 500 times faster than the Bubble sort.

The above article is an extract from from an essay prepared by Howard Toon from Lancing College for teaching about sorting to A Level Computing students. Howard has placed this and the associated programs in the public domain so if you are teaching at this level, or you are simply interested in knowing a bit more about how computer programs work, then you are welcome to a copy of the full package. Please send a disc to Steve Rochford (46 Ollgar Close, Shepherd's Bush, London W12 0NG) to receive a copy of this work.

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Writing MTSL scripts

Steve Rochford

Like many network managers, I got to be quite good at writing batch files to help me manage my RM Network. When Net LM was delivered I found that batch files were now a thing of the past and I had to learn this new MTSL. This article attempts to show that an MTSL is not that different from a batch file with two differences - it can run under Windows without having to shell to DOS and there are certain keywords which are subtly different from the batch file equivalent.

I run a three server network and one of the most important things is making sure that any changes I make on one server are also made on the other two. For example, if I install a new application on one server I want to make it available on the others as easily as possible. Installation is a three stage process; copy the necessary files to a directory in P:\LIB, write an MTSL to load it (normally using Applications Manager) and then add the new icon to the desktop. Each of the three stages then has to be repeated for the other servers and at first I wrote batch files to do the job. Recently, however, I've decided that I really ought to get to grips with MTSL so I converted the easiest batch file (the one that copies the MTSL from APPSTART) and here it is. (Text shown below in Courier is part of the program. Text in Palatino is my comment and must not be typed in)

```
rem appcopy
rem v1.00
rem 21/1/94
rem decides current server and
  copies from it to the other
  two
```

REM statements are comments - add them to the program to explain to a reader what is going on (or to remind yourself later on!)

```
prompt Choose file to copy
```

The prompt statement opens a dialogue box, puts up the message after the word prompt and waits for the user to type something. This is a great improvement on batch files which provide no direct means of getting user input. If you press Enter or click OK then the text type is stored in the variable %prompt%, if you click Cancel then the program ends immediately.

```
switch %localsrv%
```

All my stations have an environment variable called localsrv set using Station Manager to the number of the server which has drives P:, T: and U: (thanks to Charlie Dobbs at RM for this idea!) The switch statement makes a decision based on the value of this - if it's 1 then the code following case 1 is executed.

```
case 1
  echo copying %prompt% to
  serverx2 and serverx3
```

echo puts up a message to say what's going on; you have to click OK to continue. Note the use of %prompt% to show the name of the file you typed earlier.

```
  do netdisconnect z:
  do netconnect z:
 \\serverx2\public
```

To copy to another server I need to make a temporary connection to it. This makes drive Z: the public area on serverx2. I do a netdisconnect just in case some other program has made a connection earlier and not broken it. It is an error to disconnect a drive which

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was not connected but, fortunately, MTSL ignores it (but beware, it also ignores the fact that it may not have been able to connect the new drive - I should really check for an error at this point!)

```
copy p:\appstart\%prompt%
 z:\appstart\%prompt% /r
```

Now copy the file. /r at the end tells MTSL to over-write a file which may be read -only (Applications Manager automatically sets the ones it creates so they can't be accidentally deleted.) The oddity here compared to the DOS copy command is that you have to specify the destination file name - you can't just put the drive. (You can use wildcards, however, so if you typed *.exe as the name then you would copy all the EXE files).

```
 attrib +r
  z:\appstart\%prompt%
Now set the file back to read
  only then do the same process
  for serverx3.
do netdisconnect z:
   do netconnect z:
   \\serverx3\public
   copy p:\appstart\%prompt%
   z:\appstart\%prompt% /r
   attrib +r
   z:\appstart\%prompt%
   do netconnect z: /d

case 2
   echo copying %prompt% to
   serverx1 and serverx3
```

The code that goes here is the same as for serverx1 but the connections are made to the appropriate servers

```
case 3
   echo copying %prompt% to
   serverx1 and serverx2
```

Comments as above.

```
default
```

You get to the default switch if the value of localsrv is not 1, 2 or 3. This could happen if I'd forgotten to set it in Station Manager - the program just pops up a warning message and ends.

```
echo Can't identify local
  server
endswitch
```

This is where the code jumps when it has finished a particular case; just disconnect the Z: drive and then end.

```
do netdisconnect z:
```

The one thing that I was not able to do with this was use the file list box facility of MTSL so that you could pick a file from the list instead of having to type its name. I tried doing this but the code:

```
listfile p:\appstart\*.exe
```

Puts a box on screen, lets you choose a file and sets the variable %listfile% to the name of the file, including the full path. Because MTSL has no string handling facilities it's not possible to extract just the name of the file so you can't do:

```
copy %listfile% z:\appstart
```

which is what I wanted. (It would be possible to copy from P: to a special directory on T:, disconnect P: from the current server and connect it to the remote server, copy from T: to P:, delete from T:, disconnect from P: and reconnect to the local server but this seemed unnecessarily complicated!)

If you want your MTSL to be more robust then you should check the value of %returncode% after things like the copy operation. It will be 0 if it worked and a number (listed in the help file) otherwise. Be careful, however, because some operations (netconnect for example) do not set %returncode%, leaving it at the last value it was set to.

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Auditing on RM Net LM

Steve Rochford

Lan Manager can audit a number of different events which take place at the server. The events which are audited are controlled by two things - entries in the servers' lanman.ini file and changes made using the net access command. In lanman.ini there is a line which says auditing= *eventname* which specifies which events are to be audited or yes if you want all events to be audited. Examples of useful events are netlogon, use, baduse and permissions. My servers simply have auditing=resource. This allows me to audit access to any resources which have been set up with the net access command to allow auditing. For example, net access c:\lanman / success:delete sets up auditing for all successful deletions in the lanman directory. More usefully, for me, was to enable auditing on the printer queues - net access \print\a2col / success:create enables auditing of all print jobs sent to the print queue called a2col.

Scheduled to take place once a week is a CMD file called backaud - when my network was delivered thist ook place at 1.00pm on Friday but I've moved it to just before the backup starts on Friday evening. This copies the previous week's audit file to a file called lastbut1.txt and then creates a new file called lastaud.txt which contains the current week's audit log. Finally, it clears the log so that a fresh start is made for next week. You can load the audit file into Notepad (or Write if the file is too big) and although each line is easy to understand it's not easy to make sense of the whole thing because there is too much data. After a lot of wondering I decided to try and do something to collect the data using Superbase. What follows is a simple program to read the file called lastaud.txt - you need to run the program once a week (or as often as you run backaud).

The first job is to create a Superbase file to store the information. For each event there are two lines of data comprising a total of 6 fields - the username, the type of event, the date and time, and then two more fields which depend on what you are auditing. If you only audit resource access then they are the type of access (create, delete etc) and the name of the resource accessed. The Superbase file needs a matching set of 6 fields. The first two are text only and have a maximum of 23 and 21 characters. The date and time are fixed type fields, the access type needs to be 6 wide and the last can be up to 64 (I think - all the ones I've been interested in are much shorter).

I've only just started doing this so it's too soon to tell if it will give me all the information that I want but it looks promising. By setting up different reports (called Process Query in Superbase terms) I can do things like count how many jobs were sent to the laser printer or how many jobs a particular user has printed. Note that you can't find out how many pages have been printed by a user - Lan Manager simply doesn't give this information and, realistically it isn't possible to do this.

By adjusting the parameters which are audited you can also find out other information. For example, if you use

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the licence count feature of Applications Manager then you will probably want to enable baduse auditing in lanman.ini. You can then generate a query which lists all the bad uses - this tells you how many times a user tried to run an application and was denied because the licence count had been exhausted and allows you to find out how many more licences you might need (if three different users are all denied at about the same time then buy three more copies!)

```
OPEN FILE "audit"
 OPEN "lastaud.txt" FOR INPUT
 FOR i% = 1 TO 3  : REM the first three lines are header data and are
  thrown away
 INPUT LINE a$
 NEXT i%
 WHILE NOT EOF ("*") : REM keep reading until the end of audit text
  file is reached
 BLANK : REM add a blank record to the file
 INPUT &23,a$ : REM read 23 characters from the file
 b$ = LEFT$ (a$,1) : REM look at the first characters - not
  interested unless it's a username
 IF b$ <> "*" AND b$ <> " " AND LEFT$ (a$,8) < "The comm" THEN
   user = a$
   INPUT &21,type :REM now read the fields from the rest of this line
   INPUT &9,dateacc
   INPUT LINE ,timeacc
   INPUT LINE A$ :REM read the whole of the next line
   a$ = MID$ (a$,5) : REM I'm only interested in Create actions (ie a
  user printing)
   IF LEFT$ (a$,1) = "C" THEN
     action = "C"
     resource = MID$ (a$,3) :REM this is the name of the print queue
   END IF
   STORE  : REM commit the record to disc
 ELSE
 INPUT LINE a$ :   REM the record didn't start with a username so
  read the two lines and
 INPUT LINE A$ :  REM throw away the rest of this record
 END IF
WEND :REM loop back to While statement and keep reading until end of
  file.
```

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Hints and Tips

If you have an M Series 286 then the following are some suggestions about how you can get the best from it without spending too much money.

One of the problems with older computers is that they don't have either enough memory or enough disc space. Adding memory, unfortunately is very expensive but is essential if you want to run Windows applications. If you don't need to use Windows (and not everybody does) then don't buy extra memory - few DOS applications make use of more than the 640k of conventional memory. Disc space is different - even if you only use simple programs you have to store your work somewhere. Fortunately, there are now a number of companies which sell "disc doubling" software. This allows you to run a program which transparently compresses your work as you save it and expands it again when you load it. How much extra space you get will depend on what you store on your disc but you should expect to get at least 50% more space if you have a normal mix of programs and work documents (and a lot more if most of your disc is filled with text files or things like dBASE files)

Microsoft included a disc doubling program with DOS 6 called DoubleSpace. I bought this and installed it on my M Series 386 and had no problems at all but there were many reports of people who did have problems and so Microsoft have now released DOS 6.2. The significant feature of this is that the whole DoubleSpace procedure has been made a lot safer so there is far less risk of losing information from your disc.

The upgrade from DOS 5 to 6 or 6.2 is straightforward on a 286 or 386 machine - all the RM drivers that were released for DOS 5 work perfectly with DOS 6 so you can buy the upgrade from wherever is convenient but if you still have DOS 4 then you need to buy an upgrade from RM which includes the appropriate new versions of RM.SYS etc to allow you to use PC186 mode software and introduces RMUMB.SYS which is the Upper Memory Block server. This allows you to load device drivers and other programs into upper memory, reclaiming up to 192k of memory.

If you look around you should get DOS 6.2 for less than £50 - a lot less than the cost of a bigger hard disc. Another useful feature is the addition of an easy to use backup program - if you only rarely backup your work because you don't understand how backup works then this makes the whole thing much easier (and faster because it compresses the data onto floppies).

If you often install shareware and then decide you don't want it then you may find yourself with lots of odd bits left on your disc which you don't need. For example, if you do run Windows and install a new application then it will probably go in its own directory but it may also add files to your Windows directory. When you delete the application you delete its own directory but it can be hard to fin dout what it has done in the Windows directory. Regular cleaning out becomes essential on any machine.

One of the useful programs to help

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you do this is Windows File Manager. If you run File Manager, log into the Windows directory and then choose View by Date from the menu you'll see that a lot of files have the same date and time stamp - Microsoft have taken to using the time stamp to indicate version number for DOS and Windows so Windows 3.1 files are all time stamped at 3.10am. These are files that you mustn't delete (unless you are sure that you know what they are).

Before you start deleting files you should make a copy of them on a floppy disc. Then if you try and run Windows and it fails to load you can just copy back the file(s) you took out.

Files which don't have the correct time stamp are ones which you have created or altered yourself or belong to other programs. For example, files ending in .GRP are the Windows desktop groups - don't delete these - and files ending in .INI are files which contain information used by various programs in Windows. Most of them have a recognisable name (win.ini, progman.ini, control.ini and system.ini are needed for Windows to run, others like winfile.ini are created by the program of the same name - delete them if you don't use the program).

In the \windows\system directory you may find files which end .386. These are needed only when Windows is running in 386 enhanced mode and are useless on a 286 so you can safely delete them. You may also find files ending in VBX - these are Visual Basic extensions and are used by some programs written in Visual Basic (a lot of Windows shareware is written in VB as is some commercial software). The other VB files which you may not need is vbrun100.dll, vbrun200.dll and vbrun300.dll - they are quite big and aren't needed if you have no Visual Basic applications.

In the same directory you will find lots of files ending .DRV - these are driver files for various devices such as the printer and screen. If you have changed printer then you have probably got drivers for both printers on the disc so you can delete the one you no longer use.

You could also look in the \SYS and \DOS directories and see what's no longer needed. EMM386 is no use if you have a 286 and there are other files which you may never use. For exampel if you never use the DOS edit program then you can delete edit.com and edit.hlp - the first one is tiny but it uses qbasic.exe which is huge and if you don't do any BASIC programming then this can go as well. Any file in the SYS directory ending in CPI can also go (unless you are loading it in CONFIG.SYS)

Another technique for making the most of limited disc space is to archive either documents or applications which you don't often use. I used to keep PageMaker compressed using PKZIP on a floppy disc and then expand it on to the hard disc when I wanted to use it. Even if you can't get the whole application on a disc you can probably compress enough files to save 1 or 2 Mb and this then makes enough space to put on the bits of another application which you have taken off. This obviously won't work if you want both programs at the same time but it's very cheap and easy to do.

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Question Designer

Steve Rochford

Question Designer is a new package from Question Mark Computing designed to allow the creation of tests which run under Windows. The package consists of three main programs, the designer, presenter and reporter.

In many ways I'm a bad computer user because I like to install programs and then just try to use them without reading the manual. Sometimes this just gets me in a mess but this program didn't. The Presenter program starts with a screen which offers a list of files in the current directory. You can then select any of these or quit. This seems inflexible (what if the files are not in the same directory as the EXE file?) but allows you as assessor to make sure that users cannot mess about by choosing the wrong test. It is possible to start the test program in other ways so that, for example, the user does not need to type in their name but is picked up from an environment variable and the answers are not saved in the same directory as the program (both ideal on a network)

The program can show 5 different types of question and it can also show explanation screens. The multi-choice question allows only one correct response. The push button type also only allow one correct response but this is accepted immediately (with multi-choice you have to click the choice and then an OK button, giving you a chance to change your mind), Text questions accept up to a line of text which is then checked against one or more possible responses (which can be case sensitive if required). Multi-response questions offer you a list of choices from which you have to select 0 or more as correct. The most interesting are hot spot questions where you have to move a marker to the correct place on the screen. One of the examples given is a picture of a lever with unequal loads on the ends. You have to move the fulcrum to the point at which the lever balances.

Questions can be allocated scores for the correct answer (and in the case of those where more than one answer is possible you can allocate different marks depending on how "correct" the answer was).

After a question has been shown you can choose to show feedback which can simply say that you were right or wrong or it can give you detailed feedback (in a maths multi choice question with a set of distracter responses you can explain why the wrong answers are there -"You multiplied where you should have added" might be a trivial example).

The questions need not be presented in a fixed order - they can be picked randomly or the user can be allowed to move backwards and forwards through a test, much like a paper exam where you leave a question until later. It's also possible to have multiple choice type questions presented so that the responses are not in the same order (this makes cheating much harder - there's no point in telling someone about to do the test that the answer to question 2 is choice A if the choices have been shuffled!)

You can also design a test so that questions are missed out; you might start with 10 easy questions. If the

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user gets the first 3 right then you skip to the harder questions or you might decide that if a certain question is not answered correctly that you want to show an explanation screen and then show more simple questions on the same topic.

The text in a question can be in any font, size or colour supported by Windows so that you can add appropriate emphasis to the questions (and even give hints in the answers!)

Questions can be multimedia – at minimum this means you can add sounds to the program but could, for example, play a video sequence and then ask questions about it. I had great fun adding sounds to questions but I'm still not convinced that I want the computers making noises and especially not during tests!

Any question can include graphics to go with the text. The program allows you to directly import BMP or PCX files (such as those created in Paintbrush or many other graphics programs) and will also accept pictures copied via the clipboard. Included with the package is a program to take a snapshot of part or all of the screen. (I'm trying to put together a test on Excel using the program and this allows me to add pictures of bits of the Excel screen to the test)

The hot spot type question offers a number of standard markers to move around the screen or it will read standard Windows icon files. You can then specify the "hot spot" for the marker. At first I thought it would be difficult for a user to get these questions right but when you design the test you can specify that the correct area is as big as you want, making it a test of whether the user understands the question rather than how accurately the user can control a mouse.

As ever with programs that use graphics and can be used on different types of computer there can be problems with images becoming distorted; for example if you create a screen which looks fine on a SuperVGA 800x600 display and then show it on a 640x480 display then it may simply not fit. There's not much that the program can do about this but the manual offers good advice on how to make sure that you design your tests in such a way that they will work.

You can choose to build libraries of questions which can then be called from tests. This keeps the size of each test small (the test file only stores the reference to the library question, not the whole question) and allows you to build up tests very quickly once you have designed the questions.

The test can be set up so that it saves the scores for each person using it and the reporter program allows you to analyse the scores for any test in a variety of ways.

The whole package is licensed so that Designer and Reporter may only be used by one person at a time but the presenter can be used by any number of people on a single site, including use on a network which seems vary fair.

Question Designer costs £249 to schools and is available from Edhitec on 0423 871027. The DOS version of Question Mark together with the Graphics Companion has now been reduced to just £99

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Net LM Hints and Tips

If you have imported files from a CSV file into User Manager or you have changed a user's home directory before getting Update 6 then you may have altered the permissions on the user's directory so that everyone can read that user's files. Correcting this by hand is hard work but there is a useful file called PERMDOT.ZIP on the RM bulletin board which helps to put this right. Briefly, it is a Word template which reads a report on users created from User Manager and then runs a very clever macro which creates a batch file to correct the permissions. Even if you are sure the permissions are correct you might like to get the file because it's a good example of the use of Word macros.

Also on the bulletin board are a couple of useful programs. Userlist gives a constantly updated list of users currently logged on; quite trivial but useful. Settitle allows you to set the title of Program Manager to be the user's name and the name of their desktop; very useful.

Still at the BBS, if you have ever downloaded a file and found that it expands to give a .FLP file then you also 2floppy.exe which takes the FLP and creates a floppy disc image from it. WinLogo is a Windows version of Logo. It does everything I want it to do, seems easier to use than RM Logo (not least because it has a help file!), prints properly and makes saving procedures a doddle (it does it completely automatically). You can save any screen image as a BMP file and is absolutely recommended.

You may have read comments about the Internet in the press recently - ever since Bill Clinton got an Internet address the non-computing press seems to have found out that Internet exists. If you have access to a University then access to Internet is straightforward but for normal users it can be quite expensive. RM have now come to the rescue- you can now send and receive messages or files through the BBS. If you are interested then there is a full bulletin available which describes what to do and how to do it. There are no charges for access and I'm very pleased that RM have done this.

Not directly network related but if you are using a PostScript printer and find that some TrueType fonts don't print correctly (or don't print at all) then try going to the Print Setup routine and enabling the Print TrueType as graphics option - this seems to cure all sorts of odd problems.

Superbase 4 comes with a 16 user licence. When you buy more copies you don't get a 32 user licence, for example, but two 16 user licences. This doesn't matter for many things but if you want to set up a file for access by a group bigger than 16 pupils then you must have two separate copies of the file and tell each half of the class which copy to use. I'm trying to think of a better way of handling this but no luck so far!

Two pupils recently asked if there was a way in which they could exchange files. Mail would have worked but I've scrapped it as too much trouble. Instead I create a sub-directory under each user's home directory and gave the other user acces rights to this.

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Stop Stealing Sheep & find out how type works

Review by Steve Rochford

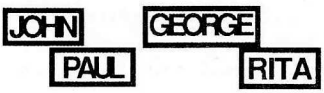
Almost any one can now get access to a huge variety of type and can use it and abuse it in many more ways than the early typographers could even dream of. This very readable book attempts to explain how type should be used and, more importantly, why.

The book starts by pointing out some of the varieties of type that exist and almost immediately points out some good and bad uses. For example, road signs in Germany are all labelled with a standard typeface. The book shows examples of this both lit from the front and behind and then shows how small changes in the design of the type could have made it much more legible and, therefore, better at doing the job for which it was designed.

The next chapter gives a brief history of the development of type (including a picture of the earliest type developed by Aldus Manutius after whom the Aldus company is named). Until quite recently all type had to be hand drawn and it was a major undertaking to design a new typeface but the advent of computers means that new typefaces can be made just by altering an existing one. This can, of course, lead to very poor quality type.

In recent years typographers have become much more aware of the different requirements that are made of type in different situations. For example, type which is used in a newspaper may have to be quite different from that in a book because the printing process is so different, and that used for a fax message needs to be different again to prevent the fax process from breaking it up.

One of my pet hates is people who type everything in BLOCK CAPITALS and the book illustrates well why this is such a bad idea; essentially, you read words by looking at their outline and the outline of all words in capitals tend to be the same, making it much harder to read them.



John Paul George Rita

Both the examples are set in the same type but the lower one is easier to read.

Other things which make for easier reading are using properly designed type for each size. Windows 3.1 supports scalable fonts on screen and any printer but this means that big print is simply a magnified version of little print. Good type doesn't work like this - the smaller sizes have thicker stems and serifs (the curly bits at the end of letters) in comparison to the bigger sizes. Traditionally type would have been made like this but until recently electronically generated type wasn't. Adobe have now introduced type which they call multiple masters - the font carries information which allows proper sizes and weights to be generated.

The spacing between words, letters and lines is also discussed. I'm not very good at judging things by eye so I let PageMaker make the decisions for

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me. If you've ever typed in PageMaker you'll have seen the line stretch and shrink as the program tries to get the best spacing but it doesn't get everything right. For example:

To Te Tr Wo r. y, 7. w-

To Te Tr Wo r. y, 7.w-

The top line was typed normally, the bottom one had each pair manually kerned - ie the spacing between the letters was adjusted to remove what looks like excess space (and you can probably see why I don't normally do this - I'm not very good at it!)

If the spacing between letters is too big then the words "break up" and you can't recognise the shapes because they just look like separate letters. Make the spacing too small and the reverse happens - the shape goes because everything is squashed together.

The two paragraphs above should look slightly different from the rest of the magazine - the first has been set with loose tracking (the words are allowed to move further apart) and the second with more leading (the space between paragraphs). If the space between words is bigger than the space between lines then your eye tends to drift down to the next line instead of across to the next word, making reading much harder.

The final part of the book is full of useful examples and ideas; things like choosing type for a memo, a letter and a spreadsheet and even comments on the ideal way in which a cookbook should be printed.

For years I've been fascinated by the subject of typography and I found this book to be an excellent discussion. I like the style of the book - each double page spread has pictures or diagrams on the left, and one main column with a sidebar on the right. The sidebar is always used to give more detailed information than that given in the main text. If you are interested in learning more about making printed work look good (or even understanding why some books or magazines look much better than others, no matter what there content), then this is a highly recommended book.

Incidentally, the rather strange title comes from Frederic Goudy, a typographer. In 1936 he was awarded a certificate, looked at it and then said "Any one who would letterspace lower case letters would steal sheep." This was rather embarrassing for the man in the audience who had carefully lettered the certificate and Goudy later apologised!

Stop Stealing Sheep & find out how type works is by Erik Spiekermann and EM Ginger, published by Adobe Press. ISBN 0-672-48543-5 (priced at $19.95 in the USA).

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Your Magazine

I really do welcome items for the magazine from anyone. You don't have to be a great writer to send something in; send a letter or a short tip for the Hints and Tips pages, everything is welcome. If you want to phone and talk something over then please do; even if you aren't sure how to write something down then I can always include your ideas in Hints and Tips or as a plea for help.

I would be particularly pleased to hear from the people who are using RM computers at home; there are quite a lot of you out there. Some of you will be experienced at working with computers and I would be interested to know why you chose RM for home use. Others will have responded to RM's advertising, perhaps because your children use the same computers at school. How are you getting on with your new machine? Did you have any problems getting started? It doesn't matter if you still don't know the answer to the problem- this is how you'll find out - and it doesn't matter if you think that your problem was trivial; remember that there are many other people who are going to be in exactly the same position as you and will welcome the help that you can give.

If you are writing for me then the ideal is to send me a disc produced using Word or Word for Windows but I can cope with any word processor that runs on a Nimbus (I think). If what you are sending is short then a letter on good old fashioned paper is fine. I can also accept articles left on the bulletin board - the easiest way to to do this is to prepare your article in a word processor and save it normally. You then send a short e-mail to me and attach your file to it when you are on-line. It's actually easier to do than to describe because the whole thing is menu driven.

Finally, we pay for published articles at the rate of £5 per printed page (although all payments are at the Editor's discretion).

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Full and half page advertisements can be placed in the magazine and details can be obtained from the Advertising Manager. We also take classified ads and members may place free ads for surplus equipment in MicroMart.

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I enclose a cheque payable to RMUG/order for £15 (£20 for overseas members). If you are not enclosing a cheque then please send an official order, indicating clearly to whom the invoice should be sent.

In order to serve our members better we like to know something about them and what they do with their computers. The information you give is confidential and we are registered as Data Users under the Data Protection Act.

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